Contrast and Information Structure:
A focus-based analysis of *but*

Carla Umbach

University of Osnabrueck

This paper presents a novel analysis of the contrastive connector *but* based on the observation that (i) the contrast induced by *but* relates to the information structure of the conjuncts and (ii) the use of *but* requires a denial with respect to an implicit question. It is shown that *but* combines additivity, as in *and/also*, and exclusion, as in *only*. This analysis provides a uniform basis to explain the apparently different uses of *but*, including semantic opposition, denial-of-expectation, and topic change. Moreover, it sheds new light on the concessive use of *but*.

1 Introduction[1]

Consider the question-answer dialogs in (1)-(3). Due to the contrastive accents in the topic, the answers in each of (1)-(3) have to comprise at least two conjuncts, otherwise Adam would be inclined to ask for a continuation: *"And / but what ...?"*. In (1) Adam asks about all of the children, and Ben addresses only a subset of the children in the first conjunct and the remaining in the second conjunct. In (2), though Adam asks about the small children only, Ben first refers to the bigger ones, and Adam has to wait for the second conjunct to get the required information. In (3), it is the other way around: Adam's question is already answered by the first conjunct and the second conjunct offers information Adam did not ask for. Either way, in each of the examples in (1)-(3) Adam's question is completely answered in the end.

(1)   a.   Adam: What did the children do today?
      b.   Ben: The **small** children stayed at HOME and/but the **bigger** ones went to the ZOO.[*]

(2)   a.   Adam: What did the small children do today?
      b.   Ben: The **bigger** children went to the ZOO, but/??and the **small** ones stayed at HOME.

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[*] **Boldface** type denotes a contrastive topic accent (in the theme part) and CAPS denote a focus accent in the rheme. The focus domain will be marked only if necessary for clarification.

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(3) a. Adam: What did the small children do today?
   b. Ben: The **small** children stayed at HOME, but/??and the **bigger** ones went to the ZOO.

It is commonly assumed that in a coherent question-answer dialog the answer has to refer to the subject matter of the question only. However, in (2) and (3), information about an additional topic is provided without rendering the answers unacceptable. Comparing (1) and (2)/(3) we observe that in the latter case the use of *but* instead of *and* is obligatory (or, at least, strongly preferred). In fact, it has been pointed out in the literature that there is a use of *but* which indicates a topic change. Yet there is no explanation why a contrastive marker can be used that way, and how this use combines with the standard use(s) of *but*: Why does the use of *but* instead of *and* render an over-informative answer acceptable, and how does this use relate to the standard interpretation of *but* conveying a semantic opposition or denial-of-expectation?

To address these questions, first, I will briefly consider contrastive topics and introduce the notion of the "quaestio" to investigate the information structure of a sentence. Then I will present the outline of a focus-based analysis of *but* providing a uniform interpretation of the seemingly disparate uses. The analysis starts from the observation that a *but*-sentence has to include a denial with respect to an implicit question relating to the alternatives given by the foci of the conjuncts. The idea then is as follows: As in the case of *and/also*, by using *but* an alternative is added to the set of alternatives under discussion. However, unlike *and/also*, this alternative will result in a false proposition when combined with the common background and thus has to be denied. Negation is well-known to trigger specific implicatures. To explain the effects brought about by the use of *but* the implicatures of negation will be made use of. This analysis accounts for the standard uses of *but* and also for the topic-change use and sheds new light on the so-called concessive use of *but*.

2 Information Structure

Following, e.g., Vallduvi & Vilkuna (1998) and Steedman (2000), I will distinguish between the theme/rheme and the focus/background dimension of information structure. The theme/rheme dimension relates to the dynamics of discourse progression, the theme containing contextually bound information including a topic, and the rheme providing information about the topic, i.e. the update potential of the utterance. A focus may occur in both the theme and the rheme part and is indicated by an accent. Following the common terminology, the complimentary part of the sentence will be called background.[1] A focus comes with a set of alternatives which, first, have to be of the appropriate type (cf. Rooth 1992) and, secondly, have to be contrastive in the sense that neither of them subsumes one of the others (cf. section 3).[2] Thirdly, alternatives have to be licenced by the context. Thus the set of alternatives under discussion, i.e. those relevant for, e.g., adverbial quantification, will be a narrow subset of the type equivalent alternatives employed in Alternative Semantics.

When a focus occurs in the theme part, it represents a contrastive topic and will typically be marked with a rising accent. Being in the theme part, the focus indicates that there exist

alternative topics to be addressed. In (1b), for example, the focus in *the **small** children* triggers the presupposition that there exist other (groups of the aforementioned) children the speaker also wants to talk about. This intuition is, e.g., captured by the partial-answer account in Krifka (1999). Following Krifka contrastive topics must comply with a "distinctiveness condition" requiring that they are subject to different rheme predications.[3] Assuming that a sentence is an answer to a (possibly implicit) question, the role of a contrastive topic consists in indicating that the answer is a partial one. (Basically, a sentence is a partial congruent answer to a question if it is entailed by some proposition p in the question meaning Q, but is not a (complete) congruent answer entailing some p in Q.) For example, in (1b) the answer given in the first conjunct is partial with respect to the question in (1a), since it is entailed by the entire answer.

There are two notorious problems with contrastive topics: First, in a sequence of answers the last one completes the requested information and, intuitively, it is not partial any longer. Secondly, in the additional-topic answers in (2b) and (3b) one of the conjuncts is a complete answer and the other one is not even congruent with respect to the question. In Krifka (1999) the first problem is handled by requiring each answer in a sequence to be partial in isolation. The second problem, however, is not considered.[4]

It is common practice to investigate both information structure and discourse structure with the help of questions. There is, however, some confusion about the role and origin of such questions. Concerning the information structure of a sentence, questions are used as a diagnostic tool to identify topics and foci. A focus is demonstrated by a question substituting a wh-phrase for a focussed phrase. For example, in (4a) below the focus (in the rheme) may include the PP or the VP or the entire sentence corresponding to either *Where did Laurie follow Ralph?*, or *What did Laurie do?*, or *What happened?* (cf. Rochemont 1986). To demonstrate the topic of a sentence aboutness-question can be used.. Altogether, the information structure of a sentence corresponds to a sequence of questions, the first one relating to the topic (or theme) and the second one to the (rheme-)focus, cf., e.g., Vallduvi & Engdahl (1996). Assuming narrow focus, the information structure of the sentence in (4a) corresponds to the (complex) question in (4b).

(4) a. Laurie followed Ralph into his BEDROOM.
     b. "What about Laurie? where did she follow Ralph?"

The correspondence of the information structure to certain questions has been exploited to define the notion of discourse coherence. Roberts (1998), for example, views a discourse as a hierarchy of (implicit or explicit) questions and subquestions where the alternative meaning (cf. Rooth 1992) of a sentence answering a (sub)question has to coincide with the (Hamblin-type) meaning of the question. Similarly, though without taking focus into account, van Kuppevelt (1995) requires each sentence in a coherent discourse to constitute the answer to an explicit or implicit question raised by the preceding discourse (thus covering both monologs and dialogs).

The idea of discourse coherence as a match between questions and answers is intuitively appealing. It is unclear, however, when and how to introduce implicit questions and how implicit questions relate to the information structure driven questions as in (4b). In (5) there is an example adapted from van Kuppevelt. As it is supposed to be a monolog there has to

be an implicit question mediating between the two sentences. According to van Kuppevelt, the implicit question is the one in (5)(i). If, however, the implicit question is reconstructed from the information structure of the second sentence, it will be the one in (5)(ii) (which is also the one employed by Roberts).

(5) a. The workers of the Philips computer division went on strike.
     (i) Why?
     (ii) What about the workers? What are they worried about?

  b. They $_{theme}$ are worried about [the managers' new ECONOMY plans]$_F$

The implicit questions in (i) and (ii) respectively are induced by different sources and, moreover, relate to different aspects of coherence. The first one is a substitute for an overt question. Therefore, it has to be a forward looking question induced by the preceding discourse. In (5)(i) it requires a causal continuation. The second question is implicit regardless of whether the discourse is a monologue or a dialog, since it is reconstructed from the information structure of (5b). It indicates the topic employed in (5b) and the background information required for (5b) to be felicitous. To account for the difference between these two questions, I will call the second one the *(retrospective) quaestio* of the utterance. Note, that the quaestio is a mere diagnostic tool displaying the contextual conditions for the utterance to be felicitous. It is spelled out as a question for illustrative reasons (and may be rather unnatural in some cases). It must not be mistaken for an overt question, and it also does not coincide with van Kuppevelt's implicit question which is assumed to be imposed by the preceding context.[5]

Distinguishing between an overt or implicit forward looking question and the quaestio discrepancies between contextual conditions given by the previous discourse and those required by the actual utterance can be revealed. In ideal cases, the quaestio will be identical with the forward looking question. In (1b), for example, the quaestio reconstructed from Ben's answer is roughly *"What did the small children do, and what did the bigger ones do*?", which is equal to Adam's question. But in more realistic dialogs the answer may depart from the overt question in various ways. In the examples in (2b) and (3b), ignoring the connective for the moment, the quaestio is the same as in the case of (1b). But this time the quaestio deviates from the overt question in (2a)/(3a) bringing in an additional topic.

Adopting the notion of the quaestio the role of the contrastive topic can be defined as indicating that the answer is partial with respect to the quaestio reconstructed from the conjunction. Congruence has to be defined in terms of a relation between the forward looking question and the quaestio, e.g., the quaestio entailing the question. This accounts for the acceptability of the dialogs in (2) and (3). But we have to be careful not to throw the baby out with the bath water: Bringing in an additional topic obviously requires some extra effort, for example, using *but* instead of *and*. So then the question is why the use of *but* facilitates a topic change.

3 Standard accounts of *but*

The semantics and pragmatics of *but* have been a topic of continuing interest since Lakoff's seminal paper in 1971. Lakoff distinguished between two uses of *but*, "semantic opposition" (*John is tall, but Bill is short*) and "denial-of-expectation" (*John is tall, but he's no good at basketball*). Starting from Lakoff's analysis, a host of investigations pointed out further uses of *but* and generalized the analysis to include other contrastive connectives. At the same time, Lakoff's distinction between a semantic opposition use and a denial-of-expectation use was questioned because, first, semantic opposition also licenses the use of *and* (*John is tall and Bill is short)*, and secondly, a denial-of-expectation may alos appear in the semantic opposition cases (cf. Lang 1984, Foolen 1991).

In the recent literature, we find two types of approaches: According to the first one, a contrast indicated by *but* has to involve conjuncts which are similar in some respects and dissimilar in other respects. This view goes back to Mann & Thompson (1988) and is elaborated in, e.g., Asher (1993) requiring conjuncts to be structurally similar and semantically dissimilar for a contrast to be licenced. According to the second one, a contrast expresses a denial-of-expectation, the first conjunct triggering an expectation refuted by an inference from the second conjunct: "P but Q" presupposes a proposition R such that P implies not-R and Q implies R. In the case of Q being equal to R, the contrast is construed as a concession (cf. e.g. Winter & Rimon 1994, Grote et al. 1997, and section 6). Of course, the implication of not-R by P has to be based on some kind of defeasible rule. Winter & Rimon (1994) use a default implication interpreted in possible world semantics. Gaerdenfors' (1994) analysis is embedded in his general framework of reasoning with expectations. Common to these analyses is the idea that the denial-of-expectation conveyed by the use of *but* is licensed by a default rule given by contextual or world knowledge.

Both views, however, come with considerable problems. The similarity-plus-dissimilarity condition has been shown in Lang (1984) to be a general requirement imposed by coordination. Following Lang, coordinated elements, first, have to be semantically independent, neither of them subsuming the other, and, secondly, there has to be a "common integrator", i.e. a concept subsuming both conjuncts. This is demonstrated in (6): In (a) semantic independence is violated because the meaning of *drink* subsumes the meaning of *martini* (or, the hearer being confronted with (6a) will conclude that a martini is meant to be something not included in ordinary drinks). And in (b) the need for a common integrator excludes the interpretation of *port* as *harbour*.

(6)   a.   # John had a drink, and/but Mary had a martini.
      b.   John bought the beer, and/but Mary bought the port.

Interestingly, the effects demonstrated in (6) also occur when we consider the alternatives evoked by focus, cf. (7a) and (b). Obviously, the set of alternatives constituting the domain of *only* in (7) has to comply with both semantic independence (which has already been observed in Krifka 1993) and the common integrator requirement.

(7)   a.   # John only paid for the drinks, not for the martini.
      b.   John only paid for the beer, not for the port.

This is no surprise if we take into account that coordinated elements have to be alternatives

with respect to each other (cf. Schwabe 2000). Actually, Lang's coordination conditions appear to be genuine conditions on alternatives and apply to coordination because coordinated elements constitute alternatives of each other. Still, these conditions are not selective with respect to the type of conjunction. Being required for both *and* and *but*, similarity plus dissimilarity constitutes a prerequisite for the use of *but*, but it does not characterize *but* as opposed to *and*.

As for the denial-of-expectation account, it is easy to show that contextual or world knowledge cannot be decisive for the use of *but*. Suppose, for example, you are not versed in botany and you don't know what loosestrife is. Nevertheless, you will interpret (8) as denying the expectation that loosestrife is found in July. This expectation, however, cannot belong to your world knowledge, simply because you cannot have any knowledge about an entity or concept you are not acquainted with.[6]

(8)   It was July but we couldn't find any loosestrife

The example in (9) refers to the film "The English Patient".[7] The situation is this: Lord Almasy has an affair with Katherine. Katherine's husband Jeffrey has to pick up Lord Almasy by plane from somewhere in the desert. Katherine will be in the plane, too. Jeffrey, knowing about the affair, decides to crash the plane on the ground and kill them all. (9a-d) tell the outcome of his plan, describing exactly the same situation. Nevertheless, in responding to different questions, the sentences differ with respect to the contrast they involve.

(9)   a.   (What happened?)
              Jeffrey is dead, Katherine is seriously injured, and Almasy is unhurt.
        b.   (Did Jeffrey succeed in killing them all?)
              Jeffrey is dead, but Almasy is unhurt and Katherine is alive, too.
        c.   (Have all of the participants been affected by the accident?)
              Jeffrey is dead and Katherine is seriously injured, but Almasy is unhurt.
        d.   (Do any of the participants need a doctor?)
              Jeffrey is dead and Almasy is unhurt, but Katherine is seriously injured.

The "loosestrife" example demonstrates that the expectation denied by the use of *but* need not be given by contextual or world knowledge and is therefore not a prerequisite for the interpretation of the sentence. Instead, it is triggered by the interpretation of *but*, comparable to a presupposition or (conversational) implicature. Taking the expectation as a presupposition allows for accommodation, which works fine for the "loosestrife" example: The botany layman hearer just accommodates that, normally, loosestrife is found in July. But what should be accommodated in the "English Patient" examples? Since the situation is the same in each of (9a-d), world knowledge cannot trigger different expectations. Instead, the expectations seem to comply with the questions. But do we really accommodate, e.g. in the case of (9b), that, normally, if Jeffrey/someone succeeds in killing himself, then he succeeds in killing the others, too? This is clearly absurd. Such expectations seem by far too ad hoc to be captured by accommodation.

The examples in (8) and (9) make plain that the expectation coming with a contrastive relation is neither provided by the meaning of the conjuncts nor by contextual or world

knowledge. Instead, the expectation is induced by the use of *but* and, moreover, seems to be intimately related to the (implicit or explicit) question the speaker wants to address with the utterance. Thus instead of readily accommodating ad hoc expectations we will investigate the role of the questions in establishing a contrast trying to find out why there is an expectation induced by *but*.

4 Two novel observations

The analysis of *but* proposed in this paper takes its starting point from two characteristics which have up to now been neglected: First, the contrast induced by *but* depends on the focus of the second conjunct. This is evident when you compare (10a+b) where second conjuncts are presented in isolation. In (10a) the verb phrase is focussed whereas in (10b) the subject is focussed. Due to the different foci, we expect different contrasts: In (10a) washing the dishes has to be contrasted with some other activity. In (10b) Bill has to be contrasted with a different person. This suggests that *but* is similar to a focus-sensitive adverb such as *only* exploring a set of alternatives. Thus it calls for an analysis which is primarily based on the information structure of the conjuncts.[8]

(10) a.   ... but Bill has washed the DISHES.
      b.   ... but BILL has washed the dishes.

The second observation relates to the questions answered by a *but*-conjunction. If the question in (11a) is answered by confirming both conjuncts, the use of *but* instead of *and* is unacceptable, cf. (b), (c). If the answer denies both conjuncts *but* is equally unacceptable, cf. (11d). But if one part of the question is confirmed and the other part denied, the use of *but* is perfect (and the use of *and* would at least be marked), cf. (11e-g). Denial, by the way, does not hinge on the presence of an explicit negation, cf. (11f). From the examples in (11) it can be concluded that, if a *but*-sentence is an appropriate answer to a question comprising two conjuncts, one of the conjuncts will be confirmed and the other one will be denied.

(11) a. Adam: Did John clean up his room and wash the dishes?
      b. Ben: [yes] John cleaned up his room and [yes] he washed the dishes.
      c.   # [yes] John cleaned up his room, but [yes] he washed the dishes.
      d.   # [no] John didn't clean up his room, but [no] he didn't wash the dishes.

      e.   [yes] John cleaned up his room, but [no] he didn't wash the dishes.
      f.   [yes] John cleaned up his room, but [no] he skipped the washing-up.
      g.   [no] John didn't clean up his room, but [yes] he did the washing-up.

This characteristic is central to the analysis of *but* because it clearly separates *but* from *and*. We will call it the *confirm+deny condition*. As demonstrated by the isolated second conjuncts in (10), the elements contrasted have to be mutual alternatives. But what does it mean for alternatives to be contrasted? As discussed in the previous section, alternatives generally have to be contrastive in the sense that they require similarity plus dissimilarity. Contrast in the sense of adversativity, however, imposes an additional requirement: When combined with the common background of the conjuncts, one of the alternatives results in a

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true proposition whereas the other one results in a false proposition. This is evident from the confirm+deny condition. When applied to the common background, i.e. *John,* one of the alternatives presented in the question (*clean the room* and *wash the dishes*) is true ("yes, John did clean the room")*,* whereas the other one is false and therefore requires negation ("no, he did not wash the dishes").

From this point of view, the connective *but* is closely related to the adverb *only* and also to the adverb *also.* The relation to *also* has been pointed out by Sæbø (2002) who presents an idea very much in line with the account given below. Following Sæbø the meaning of German *aber* is comparable to the meaning of German *auch* in that both presuppose the existence of another alternative. In the case of *auch* the proposition resulting from substituting the alternative for the topic of the sentence will be supported by the actual information state, whereas in the case of *aber* the negation of this proposition will be supported. This is clearly true of English *but/also*, too. However, if we compare *but* to *also*, we should also compare it to *only*. Consider the examples in (12).

(12) a. John cleaned up his ROOM, but he didn't wash the DISHES.
b. John cleaned up his ROOM. He did not also wash the DISHES.
c. John only cleaned up his ROOM.

In both (12a) and (b) an alternative is added to the set of alternatives-under-discussion (*clean up the room*, *wash the dishes*). However, the additional alternative results in a false proposition when combined with the background part, thus requiring negation. In adding an alternative to those under discussion, *but* is comparable to *and/also*. In excluding an alternative from those applying to the common background, *but* is comparable to *only*: In the case of *only* the alternatives under discussion have to be inferred from the context and the meaning of *only* consists in the assertion that any of the alternatives except the focussed element, if combined with the background part, results in a false proposition. *But* differs from *only* in that the alternatives under discussion are explicit in the conjuncts, but it is similar to *only* in that only one of them, if combined with the background, is true and the others are excluded, compare (12a) and (c). Comprising both additivity and exclusiveness the meaning of *but* can be characterized as "anti-additivity" (adapted from Sæbø's term "negative additive presupposition"). Exclusion is trivial, if the second conjunct is explicitly negated. However, there need not be an explicit negation for the sentence to comply with the confirm+deny condition, cf. (11f). The alternative to be excluded may also be reconstructed by using the predicate's complement (i.e. *skip the washing up* is supposed to be the set complement of *wash the dishes*). Note, that in (11f) reconstruction is obligatory.

To make use of the confirm+denial requirement beyond question-answer pairs, the idea is as follows: If the confirm+denial requirement applies to overt questions, then it also applies to the quaestio reconstructed from the *but*-sentence. Therefore, the quaestio has to be a question to which the *but*-sentence responds with *"yes...but no ..."* (to simplify matters we will confine the discussion to *yes...but no...* sequences throughout this paper). This raises the issue of how to reconstruct the quaestio of a *but*-sentence. Let us start with simple sentences. It is well-known that assertions and negations are asymmetric with respect to questions. Following common practice the quaestio of an assertion is reconstructed as shown in (13a,b), (cf. section 2). Negated sentences, as compared to assertions, are marked inducing the implicature that the positive state of affairs holds (cf. section 6). Therefore, we

will formulate the quaestio of a negated sentence as shown in (13c,d).

(13) a. Mary [went to LONDON.]$_F$
    b. "What about Mary? what did she do?"
    c. Mary DIDN'T go to London.
    d. "What about Mary? did she go to London?"

According to the confirm+deny condition, the use of *but* requires a (possibly implicit) negation. So the asymmetry of assertion and negation has also to be taken into account in reconstructing the quaestio of *and*-sentences and *but*-sentences, respectively. The quaestio of an *and*-sentence is constructed by combining a question about the topic and a question resulting from substituting the (rheme-)foci by a wh-phrase, cf. (14).

(14) a. Mary [went to LONDON]$_F$ and she (also) [went to PARIS.]$_F$
    b. "What about Mary? what did she do?"

The quaestio of a *but*-sentence, as opposed to an *and*-sentence, has to be marked to account for the negation, compare (15c/d). Either version of the quaestio is such that it suggests that the alternatives under discussion hold simultaneously. (In the latter version it is assumed that filling in the element requested by a wh-question simultaneously confirms the analogous polarity question.) Thus, either version is such that the *but*-sentence constitutes an answer of the form *"yes...but no ...".*[9] Note that in the case of (15b) the quaestio nevertheless has to be the one in (c)/(d) because the quaestio has to trigger an answer complying with the confirm+deny condition.

(15) a. Mary [went to LONDON]$_F$, but she DIDN'T [go to PARIS.]$_F$
    b. Mary [went to LONDON]$_F$, but she [skipped PARIS.]$_F$
    c. "What about Mary? did she go to *both* London and to Paris?"
    d. "What about Mary? what did she do? and did she *also* go to Paris?"

As discussed in section 2, the quaestio is a mere tool reflecting the contextual conditions imposed by the speaker, not to be mistaken for an overt question. To be sure, an *and*-sentence and a *but*-sentence may respond to the same overt question. But the *and*-sentence gives an unmarked quaestio, whereas the *but*-sentence induces a quaestio suggesting that the alternatives under discussion hold simultaneously.

5 A focus-based analysis of *but*

To apply the idea presented above to *but*-sentences in general, they will classified as being either a "simple contrast" or a "double contrast". The analysis is supposed to include *but*-conjunctions with a full stop instead of a comma. Correction cases, however, are left out.[10] The simple contrast cases involve one pair of alternatives to be contrasted, e.g. *John cleaned the room, but he didn't wash the dishes.* The double contrast cases include two pairs of alternatives, e.g. *John slept, but Bill watched TV.* For each of these cases we will briefly consider possible foci, reconstruct the quaestio and show that they comply with the confirm+deny condition. We will refer to the alternative to be denied as the *Expected Alternative* and to the corresponding one in the first conjunct as its *Sister Alternative*.

In the case of simple contrast there is one pair of contrasted alternatives refering to either predicates or individuals or propositions, cf. (16), (17), (18). There is a common theme background for both conjuncts, e.g., *John* in (16), and *clean the room* in (17). If the conjuncts are all-rheme sentences, as in (18), we will assume that the theme is implicitly given by the reported event (cf. Jäger 2001). The contrasted alternatives are usually given by the foci in the rheme parts of the conjuncts, cf. the (a)-versions. We also find accents on verum-elements (i.e. on the negation or on the finite verb, cf. Höhle 1992), cf. the (16b), (17b). Since foci on verum-elements are clearly rheme-foci, the remaining foci have to be contrastive topics (i.e. theme-foci) regardless of their position at the end of the sentence (compare Steedman 2000 for discontinous themes). In German, in these cases the word order will be reversed which is a clear indication that the contrasted alternatives are contrastive topics. For example, (16b) corresponds to ***Aufgeräumt** HAT John, aber **abgewaschen** hat er NICHT*.

simple contrast
predicates:
    (16) a.   John cleaned up the ROOM, but he didn't wash the DISHES.
          b.   John DID clean up the **room**, but he did NOT wash the **dishes**.
          c.   John cleaned up the ROOM, but he skipped the WASHING-UP.
          d.   "What did John do?, and did he also wash the dishes?"

individuals:
    (17) a.   JOHN cleaned up the room, but BILL didn't.
          b.   **John** DID clean up the room, but **Bill** DIDN'T.
          c.   *JOHN cleaned up the room, but BILL did.
          d.   "Who cleaned up the room?, and did Bill do that, too?"

propositions:
    (18) a.   [It is RAINING]$_F$, but [we are not going to stay at HOME]$_F$
          b.   [It is RAINING]$_F$, but [we are going to go for a WALK]$_F$
          c.   "Is it raining, and are we going to stay at home?"

Each of (16)-(18) requires that either there is an explicit negation in the second conjunct, or the Expected Alternative can be reconstructed from the focus in the second conjunct by predicate negation, cf. (16c)/(18b). The corresponding quaestios are given in (16d), (17d), and (18c). Note that in the case of individual-type alternatives explicit negation is obligatory, cf. (17c). The reason for this is obvious: Individuals, as opposed to predicates, cannot be negated - there is no "non-Bill".

The double contrast cases provide two pairs of alternatives to be contrasted. In each of the conjuncts there has to be a focus in the theme part, i.e. a contrastive topic, and a focus in the rheme part. Complexity arises from the fact that the alternatives need not be parallel, i.e. both relating to either a contrastive topic or a rheme focus. They may also be "crossed", one of them relating to a contrastive topic and the other one to a rheme focus.[11] The four double contrast variants are given in (19)-(22).

double contrast

parallel:

    (19) **John** cleaned up the ROOM, but **Bill** did the DISHES.

    (20) It was JOHN who cleaned up the **room**, but the **dishes** were washed by BILL.

crossed:

    (21) **John** cleaned up the ROOM, but it was BILL who did the **dishes**.

    (22) It was JOHN who cleaned up the **room**, but **Bill** did the DISHES.

In the double contrast cases, there is no negation in either of the conjuncts. Nevertheless, there is a denial. The sentence in (19), for example, clearly entails that (i) John did not wash the dishes, and (ii) Bill did not clean up the room. Following Krifka (1999) these entailments are due to the distinctiveness condition induced by contrastive topics which requires contrastive topics to be subject to different rheme predications (cf. section 2). Taking these entailments into account, the double contrast cases comply with the confirm+deny condition. Let us consider the crossed variant in (23) to exemplify the double contrast characteristics.

    (23) a.   **John** cleaned up the ROOM, but it was BILL who washed the **dishes**.
          b.   "What did John do?, and did he wash the dishes, too? and if not, who did?"
          c.   [yes] John cleaned up the room, but [no, John did not do the dishes]; the dishes were washed by Bill.

In the double contrast cases the Expected Alternative is given by the contrastive topic of the second conjunct, i.e. in (23) *wash-the-dishes*. In accordance with the confirm+deny condition, the quaestio is reconstructed suggesting that Expected Alternative does apply, i.e. John did wash the dishes, cf. (b). Taking the entailments into account, the quaestio yields a "*yes...but no ...*" answer, cf. (c). Note, that the quaestio is nearly the same as in the simple contrast predicate case in (16). In fact, (16) and (23) are very much alike, both conveying the information that John cleaned up the room and did not do the dishes. However, as compared to the simple contrast case, in the double contrast case we additionally learn who finally did the washing up.

In general, the picture is as follows: In the simple as well as the double contrast cases *but* is associated with a focus in the second conjunct which provides the Expected Alternative (EA). The EA corresponds to a Sister Alternative (SA) in the first conjunct. EA plus SA constitute the alternatives under discussion referred to in the quaestio. The meaning of *but* consists in imposing a *Denial Condition*: The proposition resulting from substituting the Expected Alternative for its Sister Alternative in the first conjunct is false.

To formulate these conditions as a general scheme it would be ideal if the Expected Alternative and its Sister Alternative were directly related to the theme or rheme focus of the respective conjunct. Unfortunately, the situation is more complex. Although the EA occurs mainly in a contrastive topic, as in (16b), (17b) and (19)-(22), it may also occur in the rheme focus, compare (16)-(18a). If the EA has to be reconstructed via predicate negation, as in (16c) and (18c), it also relates to the rheme focus. Thus the best we can say is that the EA is provided by the contrastive topic of the second conjunct if there is a

contrastive topic and is provided by the rheme focus otherwise.

For the Sister Alternative SA, the situation appears even more complex because it seems to be arbitrarily distributed over contrastive topics and rheme foci. But note that the SA has to correspond to the EA with respect to its semantic type (and additional requirements on alternative sets, cf. section 3). Therefore, the SA can be determined once the EA is fixed. All in all, we can say that although it's not the case that the EA and the SA are directly related to theme or rheme focus of the respective conjunct, they can nevertheless be determined taking the information structure of the conjuncts and the semantic types into account.

Now, the meaning of "C_1 *but* C_2" can be spelled out in a focus semantic as follows:

(24) (i) the assertion that $[C_1]^0$ & $[C_2]^0$,
          (conjunction of the ordinary meanings of the conjuncts);

      (ii) the presupposition that $Alt(SA) = Alt(EA) = \{SA, EA\}$
          where $\{SA, EA\} \subseteq [SA]^A$ and $[SA]^A = [EA]^A$,
          (the expected alternative and its sister constitute the set of alternatives under discussion, which is a subset of the alternative meaning of the contrasted items);

      (iii) the entailment that $\forall x \in Alt(SA).\ Back_{C1}(x) \rightarrow x{=}SA$
          (out of the set of alternatives under discussion, the sister alternative is the only one such that the application of the C1-background is true, where the C1-background is C1 minus SA).

The condition in (ii) accounts for the additivity relating *but* to *and* and *also*. The condition in (iii) accounts for the Denial Condition. Note that (iii) corresponds to the meaning of *only* applied to the SA. The condition in (ii) is a presupposition because it concerns the respective alternative sets. The condition in (iii) is an entailment. It may trivially follow from the assertion in the second conjunct, as in (16a), or it may require the reconstruction of the EA via predicate negation, as in (16c), or it may follow from the combination of the conjuncts, as in (19)-(22). In any case, it is an entailment instead of a presupposition because it does not survive under negation, modal embedding etc. (although one has to be careful when applying these tests because *but*-sentences seem to resist modal embedding).

Combining additivity and the denial condition *but* constitutes an "anti-additive" operator: According to (ii), the alternatives under discussion are restricted to SA and EA. According to (iii), $Back_{C1}(EA)$ has to be false. So the alternative to be chosen as the EA has to be an alternative which is rejected (this is why we have to reconstruct the EA in the case of (16c)). From the point of view of discourse coherence, the rejected alternative is the one which, together with the sister alternative, is attached to the previous discourse.

To conclude this section, let us consider some consequences of the conditions in (24). First, sentences as the one in (17c) are ruled out because there is no overt negation in the second conjunct and it is impossible to reconstruct a negated version from an individual. Secondly,

trivial sentences as in (25) are ruled out. The reason for this is as follows: Although it is easy to reconstruct an overtly negated predicate, cf. (25b), this predicate cannot constitute an element of Alt(SA) because alternatives are required to be compatible (cf. the common integrator requirement in section 3). Thirdly, sentences such as (26) are not ruled out. This example does allow for the reconstruction of an appropriate EA, cf. (26b), and although it appears strange at first sight, there are contexts where it is adequate (Suppose, for example, that John is a five year old and is eager to help with the housework. Fearing for her chinese tea set John's mother has strictly advised him not to touch the dishes. When she comes back from the supermarket, she asks what John has been doing. In this context, (26) will be an acceptable answer.) Finally, there are *but*-sentences employing scalar alternatives, e.g., (27). In these cases, the Expected Alternative must not be subsumed by its Sister Alternative while the reverse subsumption is allowed. Being excellent implies being good as a student. Hence (27b) is a contradiction while (a) is acceptable.[12] Unfortunately, scalar alternatives violate the semantic independence condition posed in section 3. But this is a general problem in focus semantics not specific for *but*-sentences.

(25) a. *John cleaned the room but he cleaned the room.
     b. *John cleaned the room but he did not leave the room in a mess.

(26) a. John cleaned the room but he washed the dishes.
     b. John cleaned the room but he did not skip the washing-up.

(27) a. As a student, John is good, but he is not excellent.
     b. ?? As a student, John is excellent, but not good.

6 Denial-of-Expectation

Being the essential characteristic distinguishing *but* from a mere conjunction the denial condition appears fairly simple. It is not to be misunderstood as introducing a negation, *but* is not a NAND! Instead, *but* requires a negation in the way a verb selects an argument of a certain type. The denial condition is trivially satisfied if there is an explicit negation or may be satisfied by entailments stemming from contrastive topics. Or, in the case of simple contrast without explicit negation, it requires the reconstruction of the Expected Alternative. In any case, the denial condition seems to be rather harmless. So, how can it bring about the whole range of effects ascribed to the use of *but*?

It is well-known that negated sentences have a general tendency to trigger the expectation that the corresponding affirmative proposition holds (cf. Givon 1978). Givon argues that the utterance of *"Sally is pregnant."* is felicitous if the hearer is completely neutral about the possibility of Sally being pregnant. But if the negated sentence, i.e. *"Sally is not pregnant."* is uttered in an equally neutral context, the hearer will be confused and may respond: *Wait a minute - was she supposed to be pregnant?* (Givon's example (23), (24), (25a)). When using a negated sentence the speaker obviously presumes that the hearer expects the corresponding affirmative to be true. Of course, this expectation cannot constitute a (semantic) presupposition since it is denied by the assertion. We will regard it

as a conversational implicature (which can be cancelled).

According to the Denial Condition, any *but*-sentence involves a negation. Therefore, just like simple negated sentences, *but*-sentences trigger the expectation that the corresponding affirmative holds. For example, "*John cleaned up the room, but he didn't wash the dishes.*" triggers the expectation that "*John cleaned up the room, and also washed the dishes.*" corresponding to the suggestion conveyed by the quaestio, cf. (16d). So in the end, the idea that there is an expectation denied by the use of *but* is confirmed. However, contrary to what is common in the literature, the expectation is, (i) the result of the general implicature of negation instead of default knowledge and, (ii) it refers to a coincidence of facts instead of a regularity.

Let us compare the analysis given here to the standard account of *but*, as e.g. in Winter & Rimon (1994): In the standard account, it is assumed that a sentence "P *but* Q" is licensed if there is a proposition R such that P defeasibly implies not-R and Q implies R, cf. (28), where the choice of a suitable proposition R is left to the hearer. The contrast is then construed as a contradiction to a defeasible rule representing an expectation, cf. (28) and the example in (29). In (30) the special case of R being equal to Q is demonstrated which according to this account expresses a concession.

(28) standard account
"P *but* Q": $(P \rightarrow_D \neg R)$ & $(Q \rightarrow R)$
expectation: "Normally, P implies not-R"

(29) a. John cleaned up the room, but he didn't wash the dishes.
b. R = "He is a bad guy."
c. "Normally, if someone cleans up the room, then he is a not a bad guy."

(30) a. It is raining, but we are going to go for a walk.
b. R(=Q) = "People go for a walk."
c. "Normally, if it is raining, people stay at home."

In contrast, in the approach suggested in this paper the contrast is established by the contrasted alternatives, one of them giving a true proposition when combined with the common background, and the other one giving a false one. However, due to the general implicature of negated sentences there is the expectation that both alternatives come true. For ease of comparison, in (31) the conjuncts are represented in a structured-meaning notation. (32b) and (33b) show the expectations predicted by the focus-based account.

(31) focus-based account
"P *but* Q": P = <sister(EA), B> & $Q \rightarrow \neg$<EA, B>
expectation: "<sister(EA), B> and <EA, B> hold simultaneously"

(32) a. John cleaned up the room, but he didn't wash the dishes.
b. "John cleaned up the room, and he washed the dishes."

(33) a. It is raining, but we are not going to stay at home.

b.   "It is raining and we stay at home."

On the focus-based account, the expectation triggered by *but* refers to a coincidence of facts. The hearer may, of course, infer a regularity if this is licensed by her world knowledge. In (33), e.g., the expectation obviously responds to a default regularity: "If it is raining we will stay at home". In (32), however, we will not infer that, normally, if someone cleans up the room, then he will also wash the dishes. In cases like this, where it is counterintuitive to assume a regularity between the conjuncts, the standard account has to employ an additional proposition R to yield an indirect contradiction. In our account, there is no need for an extra proposition to explain the contrast. There may, of course, be a multitude of propositions to be inferred from the first conjunct. But this is irrelevant for the contrast induced by *but*, because there is no need for a defeasible regularity to explain the contrast.

Since it is a mere implicature induced by negation, the expectation plays a minor role. The quaestio is by far more interesting, because it reflects the conditions under which the use of *but* is felicitous which is decisive for discourse coherence. Of course, for the quaestio to respond to some question-under-discussion given by the previous context, we will have to assume additional inferences. But this is a general problem of discourse coherence not restricted to the use of *but*.

In the remainder of this paper we will discuss the combination of *but* with *too* and *either,* and also the so-called concessive use of *but*. Finally, we will come back to the additional topic examples presented at the beginning of the paper.

7 *Too, either*

Let us come back to the simple contrast cases discussed in (16)-(18) above. If the alternatives are individuals, explicit negation is obligatory, i.e. (17c) is not acceptable. This was explained by the fact that individuals cannot be negated and the Denial Constraint cannot be satisfied. However, if the particle *too* is added, the sentence will be acceptable without explicit negation, the addition of *too* obviously compensating for the missing negation, cf. (34a). Similarly, a *but*-sentence comprising two negated conjuncts will be acceptable if the particle *either* is added, (34b). So the question is: How does the addition of *too/either* combine with the Denial Condition?

(34) a.   **John** cleaned up the ROOM, but BILL did, TOO.
      b.   **John** DIDN'T clean up the room, but **Bill** didn't, EITHER.

First, note that in (34) *too/either* have to be accented. Moreover, the subjects will also be accented, i.e. they will be contrastive topics. Following Krifka (1999), if *too* is accented, it relates to a contrastive topic and makes it possible to get around the distinctiveness constraint implicated by the Gricean maxim of manner: "be brief", (cf. section 2). This is the reason why in (35) (=(48) in Krifka 1999) the version in (b) is clearly preferred compared to (a).

(35) a.   ?? **Peter** ate PASTA and **Pia** ate PASTA.

b. **Peter** ate PASTA and **Pia** ate pasta, TOO.

It is commonly held that *too* expresses that the predication holds for at least one proper alternative of the expression in focus. So *too* in (36a) indicates that there are at least two individuals cleaning up the room, i.e. John and Bill. This entails that John was not the only one cleaning up the room, which gives us the alternative denied by the use of *but*. Accordingly, the quaestio is reconstructed suggesting that John was the only one, cf. (36b). Hence, the addition of *too* allows the reconstruction of the Expected Alternative (*be the only one who cleaned the room*) thus complying with the denial condition. Likewise, in the case of *either*, the Expected Alternative is given by *be the only one who did not clean the room*, cf. the quaestio in (37b).

(36) a. **John** cleaned up the ROOM, but **Bill** did, TOO.
     b. "What did John do?, and was he the only one who did?"

(37) a. **John** didn't clean up the ROOM, but **Bill** didn't, EITHER.
     b. "Did John leave the room in a mess, and was he the only one who did?"

In the case of an *and*-conjunction, as in (35b), using *too* the speaker can pick up a previous predication and belatedly add another element for which the predication holds. (Maybe she didn't remember the additional element in the beginning.) In fact, the second conjunct in (35b) looks like a rider to the first conjunct. In the case of a *but*-conjunction with additional *too* we don't have the feeling that the second conjunct is a rider, cf. (36a). Moreover, if the speaker had just forgotten to tell us about Bill, then why should she use *but* instead of *and*? Consider, however, the quaestio in (36b). Obviously, by using *too* in combination with *but* the speaker doesn't belatedly add some information. Instead, she deliberately triggers the expectation that John was the only one cleaning up his room.

8 "concessive *but*"?

It has often been claimed that there is a concessive use of *but* (cf. e.g. Sanders et al. 1992, Winter & Rimon 1994, Grote et al. 1997), the reason being that in certain cases a concessive marker may be added or even substituted for *but* without apparently affecting the meaning of the sentence. For example, (38a-c) at first sight seem to be equivalent.

(38) a. It was raining, but Bill went for a walk.
     b. It was raining, but Bill went for a walk nevertheless.
     c. It was raining, nevertheless Bill went for a walk.

To view *but* as being interchangeable with a concession in these contexts, one has to assume that the meaning of a concession consists in a (direct) denial of an expectation (i.e. P defeasibly implies not-Q, cf. section 3/5). This interpretation, however, fails to explain the systematic relationship between concessive and causal statements. In König (1991), it is convincingly argued that a concession constitutes "incausality", i.e. a concessive statement is the dual of a causal statement: "P *although* Q" iff "not (not-P *because* Q)". According to the incausality interpretation, (39a) is paraphrased as (39b).

(39) a.   Bill is rich although he lost a lot of money.
    b.   It is not the case that ((Bill is not rich) because (he lost a lot of money)).

On the other hand, it is well-known that, although the semantic meaning of *and* is a mere conjunction, an *and*-conjunction may be construed as, e.g., a causal relation, cf. Posner (1980). For example, although the speaker asserts a plain conjunction, in specific contexts (40a) may be read as (40b). However, interpreting the conjunction *and* as a causal relation is clearly a case of over-interpretation not included in the meaning of *and*.

(40) a.   It is raining and Mary is happy.
    b.   It is raining and Mary is happy because of that.

Similarly, a *but*-conjunction as in (38a) may be interpreted as a concession. However, as in the case of *and* this interpretation is not licensed by the meaning of *but*, which is a plain conjunction (plus the Denial Condition). Instead, it it induced by causal over-interpretation, as in the case of *and*, the only difference being that due to the inherent negation causal over-interpretation results in a concession. The example in (41) demonstrates how causal over-interpretation in the case of *but* results in incausality: In (b), according to the Denial Condition, the negation is reconstructed. In (c) the conjunction is supplemented with a causal relation. The causal relation combines with the negation resulting in incausality, i.e. a concessive relation. Thus causal overinterpretation of (41a) results in (d).

(41) a.   It is raining but Mary is happy.
    b.   It is raining but it is not the case that Mary is not happy.
    c.   It is raining but it is not the case that Mary is not happy because of that.
    d.   It is raining but Mary is happy in spite of that.

In conclusion, there is no "concessive *but*" just as there is no "causal *and*". The meaning of *but* does not include incausality, just as the meaning of *and* does not include causality. At the same time, *but* is perfectly compatible with a concessive connective, just as *and* is compatible with a causal connective. Therefore, contrast and concession can apply simultaneously. This contradicts the common assumption that text spans are linked by one and only one discourse relation (cf. e.g. Mann & Thompson 1988), but it strongly suggests that contrast and concession constitute different types of discourse relations, exploiting different features of the related segments.[13]

9 Topic change

Let us finally come back to the dialogs in (1)-(3) at the beginning of this paper, which posed the question of why, in (2a) and (3a), the use of *but* instead of *and* is obligatory. Consider the quaestiones given below. In the unmarked case in (1b) both *and* and *but* are acceptable because Ben may intend his answer as either referring to the question (1c) or to the one in (d). Note, however, that there is a crucial difference: Unlike the *and*-quaestio the *but*-quaestio triggers the expectation that the bigger children did the same thing as the small ones did. By using *but* in (2b) and (3b) Ben deliberately conveys this expectation. In this way, although actually deviating from the original topic of Adam's question, Ben presents the additional topic as being closely related to the original one. Thus, by using *but*, Ben

suggests that the additional topic is relevant, too, and the deviation is reasonable.

(1) a. Adam: What did the children do today?
    b. Ben: The **small** children stayed at HOME and/but the **bigger** ones went to the ZOO.
    c. Ben's quaestio when using *and*:
       "What did the small children do and what did the bigger ones do?"
    d. Ben's quaestio when using *but*:
       "What did the small children do, and did the bigger ones do the same?"

(2) a. Adam: What did the small children do today?
    b. Ben: The **bigger** children went to the ZOO, but the **small** ones stayed at HOME.
    c. Ben's quaestio:
       "What did the bigger children do, and did the small ones do the same?"

(3) a. Adam: What did the small children do today?
    b. Ben: The **small** children stayed at HOME, but the **bigger** ones went to the ZOO.
    c. Ben's quaestio:
       "What did the small children do, and did the bigger ones do the same?"

To conclude, the dialogs in (2) and (3) clearly demonstrate that an answer need not refer to the topic of the question only. This suggests that a natural language dialog should not be conceived as a server-client relation where B has to answer all and only A's questions. Partners in a dialog seem to be "peer-to-peer": They are entitled to introduce an additional topic, but they are bound to relate the additional topic to the original one, thus minimizing the deviation. One way to do this is by using the conjunction *but*.

References

Asher, N. (1993) Reference to Abstract Objects in Discourse, Kluver.

Brauße, U. (1998) Was ist Adversativität? *ABER* oder *UND. Deutsche Sprache* 2, 138-159.

Büring, D. (1998) Topic. In Bosch, P. & R.van der Sandt (eds.) *Focus and Natural Language Processing*. Cambridge University Press, 142-165.

Büring, D. (1999) Focus and Topic in a Complex Model of Discourse. In: Geurts, Krifka, van der Sandt (eds.) *Focus and presupposition in a multi-speaker discourse*. ESSLI-99 Workshop Reader.

Carlson, L. (1983) Dialogue Games. Reidel, Dordrecht.

Foolen, A. (1991) Polyfunctionality and the semantics of adversative conjunctions. Multilingua 10-1, 79-92.

Forbes, K., Miltsakaki, E., Prasad, R., Sarkar, A., Joshi, A., Webber, B. (2001) D-LTAG System - Discourse Parsing with a Lexicalized Tree Adjoining Grammar. In Kruijff-Korbayova, I. & Steedman, M. (eds.): *Proceedings of the ESSLLI 2001 Workshop on Information Structure, Discourse Structure and Discourse Semantics*, 17-36.

Gaerdenfors, P. (1994) The role of expectations in reasoning. In: M. Masuch, L. Pólos (eds) *Knowledge Representation and Reasoning Under Uncertainty*. Springer, Berlin/New York, 1-16.

Ginzburg, J. (1996) Interrogatives: Questions, Facts and Dialogue. In Lappin, S. (ed.) *The Handbook of Contemporary Semantic Theory*. Blackwell, Oxford, 365-422.

Givon, T. (1978) Negation in Language: Pragmatics, Function, Ontology. In Cole, P. (ed) *Syntax and Semantics: Pragmatics*. Vol. 9, Academic Press, New York, 69-112.

Grote, B., Lenke, N., Stede, M. (1997) Ma(r)king Concessions in English and German. *Discourse Processes* 24, 87-117.

Höhle, T. (1992) Über Verum-Fokus im Deutschen. In: J. Jacobs (ed.) *Informationsstruktur und Grammatik. Linguistische Berichte*, Sonderheft 4/1991-92, 112-141.

Jäger, G. (2001) Topic-comment structure and the contrast between stage level and individual level predicates. *Journal of Semantics* 18, 2, 83-126.

König, E. (1991) Concessive relations as the dual of causal relations. In Zaefferer, D. (Ed.) *Semantic universals and universal semantics*. Groningen-Amsterdam studies in semantics 12, Foris, 190-209.

Krifka, M. (1993): Focus and Presupposition in Dynamic Interpretation. *Journal of Semantics* 10, 269-300.

Krifka, M. (1999) Additive particles under stress. Proceedings of SALT 8. Cornell, CLC Publications, 111-128.

Krifka, M. (1999b) Frameworks for association with focus. Workshop "Intonation and Interpretation", Reader ESSLLI 99, Utrecht.

Kuppevelt, J. van (1995) Discourse structure topicality and questioning. *Journal of Linguistics* 31, 109-147.

Lakoff, R. (1971) If's, and's and but's about conjunction. In Fillmore, Ch., Langendoen, T. (eds.): *Studies in linguistic semantics*. de Gruyter, New York, 114-149.

Lang, Ewald (1984): The semantics of coordination. SLCS 9, Amsterdam, Benjamins.

Mann, W., Thompson, S. (1988) Rhetorical structure theory: Towards a functional theory of text organization. *TEXT* 8 (2), 243-281.

Posner, R. (1980) Semantics and pragmatics of sentence connectives. In Searle, Kiefer, Bierwisch (eds.) *Speech act theory and pragmatics*. Reidel, Dordrecht, 169-203.

Quirk, R., Greenbaum, S., Leech, G., Svartvik, J. (1985) A comprehensive grammar of the

English language. Longman.

Roberts, Craige (1998) Focus, the flow of information and universal grammar. *Syntax and Semantics* Vol. 29 (*The Limits of Syntax*). Academic Press, 109-160.

Rochemont, M. (1986) Focus in generative grammar. Benjamins, Amsterdam.

Rooth, M. (1992) A Theory of Focus Interpretation. *Natural Language Semantics* 1, 75-116.

Sæbø, Kjell Johan (2002) Presupposition and Contrast: German *aber* as a Topic Particle. Paper presented at the Sinn&Bedeutung 2002, Konstanz.

Sanders, T., Spooren, W., Noordman, L. (1992) Toward a Taxonomy of Coherence Relations. *Discourse Processes* 15, 1-35.

van der Sandt, R. (1992) Presupposition Projection as Anaphora Resolution. *Journal of Semantics* 9, 333-377.

Schwabe, K. (2000): Coordinative Ellipsis and Information Structure. In: Schwabe, K. & Zhang, N. (eds.): *Ellipsis in Conjunction*. (= Linguistische Arbeiten 418) Tübingen, 247-269.

Steedman, M. (2000) Information Structure and the Syntax-Phonology Interface. *Linguistic Inquiry* 31, 4, 649-689.

Umbach, C. (2003) Anaphoric Restriction of Alternative Sets: On the Role of Bridging Antecedents. Proceedings of "Sinn und Bedeutung" 7, Konstanz linguistics working papers.

Vallduvi, Enric & Engdahl, Elisabeth (1996) The cross-linguistic realization of information packaging. *Linguistics* 34, 459-519.

Vallduvi, E., Vilkuna, M. (1998) On Rheme and Kontrast. *Syntax and Semantics* Vol.29. Academic Press, 79-108.

Winter, Y., Rimon, M. (1994) Contrast and Implication in Natural Language. *Journal of Semantics* 11, 365-406.

Notes

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[1]The model of information structure being a two-dimensional one it would be more adequate to consider the local background within the theme or the rheme, respectively (cf. Umbach 2003). But since the local background does not play a role in this paper a global notion of background can be used simplifying the discussion.

[2]Vallduvi & Villkuna (1998) actually use the term "kontrast" instead of focus. Note, however, that contrastiveness in this sense is a general requirement irrespective of whether the focus is due to, e.g., a wh-question, or adverb like *only*, and must not be confused with the notion of contrast related to the conjunction *but*.

[3]According to Krifka (1999), for a contrastive topic T occuring with a comment (= rheme part) C there is no alternative T' of T such that the speaker is willing to assert C with respect to T'. Distinctiveness is implicated by the Gricean maxim of manner - "be brief". For if the same rheme predicate applies, the elements can be conjoined yielding a more concise statement. The stressed particle *too* allows the speaker to circumvent the distinctiveness constraint, cf. section 7.

[4]The open-question account in Büring (1998) fails with respect to both problems. The strategy account in Büring (1999) seems to handle both problems. But it does not cover "crossed" contrastive topics in double contrasts, as in. e.g. (21)/(22), cf. section 5.

[5] It has been suggested that the quaestio corresponds to the "question under discussion" employed in Ginzburg (1996). However, similar to van Kuppevelt's implicit question, Ginzburg's question under discussion seems to be triggered by the preceding context and is regarded as a substitute for an overt question.

[6]More than you ever wanted to know about loosestrife, thanks to Kathryn Bock: "loosestrife = Lysimachia; invasive perennial, can in some varieties displace native plants".

[7]This example is adopted from Brauße (1998).

[8]*But* may even be regarded as a genuine focus-sensitive operator. Then, of course, *and* has to be regarded as being focus-sensitive, too. This would lead to a considerable extension (weakening?) of the notion of focus-sensitivity. Another objection concerns word order. English *but* cannot float within the sentence whereas focus-sensitive particles usually can. But note that English *however* can float and actually is sensitive to the focus, cf. Forbes et al. (2001). With respect to German *aber,* which can also float, there has been an long-standing discussion about whether there is a particle *aber* in addition to the connective. However, from a semantic point of view, a separate particle *aber* seems unwarranted.

[9]The idea that *but*-sentences correspond to *yes-no* sequences has been suggested in Carlson (1983). Carlson assumes that in a *but*-sentence there is a common topic-question which admits of two contradictory answers. The first conjunct constitutes evidence for the positive answer while the second conjunct verifies the negative one. For example, "*He tried but he failed*" corresponds to the topic question "*Did he do it or did he not do it?*". The first conjunct amounts to confirming the topic question (*He did do it.*) while the second conjunct rejects it (*He did not do it.*). The apparently different uses of *but* are reduced to just one dialog rule: When a player has addressed a move to a given topic, any player may rejoin it by a sentence beginning with *but*, addressing a coordinate but contradictory topic (162 f.). Carlson does not take the foci into account and he does not discuss the construction of the topic question. However, the basic idea is close to the analysis given here.

[10] The focus-based analysis originated from research on German *aber*, which is similar to English *but* except that correction has to be indicated by *sondern* instead of *aber*. Therefore the exclusion of correction cases was natural. English *but* covers both contrast and correction, but in the correction use the conjuncts are predicates or nominal phrases etc. instead of full sentences (cf. Quirk et al. 1985). Correction in English as well as in

German requires the first conjunct to be negated. Thus, as in the contrastive cases there is a denial excluding one of the alternatives presented. However, the correction cases clearly differ from the contrastive ones with respect to the quaestio they respond to, cf. (ii)/(iv). While the contrastive quaestio suggests that Bill ate both the apple and the banana (or neither the apple nor the banana), the correction quaestio only refers to the apple. This difference reflects the different expectations/contexts relating to contrast and correction, respectively: While a contrast induces the expectation that both alternatives apply to the common background, a correction presupposes that exactly one of the alternatives is true.

> (i) Bill did not eat the apple but the banana.
> (ii) Did Bill eat the apple?

> (iii) Bill did not eat the apple but he ate the banana.
> (iv) Did Bill eat the apple and the banana /neither the apple nor the banana?

[11] The fact that the crossed versions are relevant has been questioned because, in English, they seem to occur rarely. In German, crossed versions are perfectly natural and occur frequently (***John** hat AUFGERÄUMT, aber **abgewaschen** hat BILL.*). From a theoretical point of view, the crossed versions are interesting because they demonstrate that contrastive topics need not be elements of the same set of alternatives, which is a challenge for, e.g., the account of Büring (1998)/(1999).

[12] It might be objected that *John is not good but excellent.* is acceptable despite the fact that being good is implied by being excellent. But note that this sentence is a correction and, moreover, refers to the appropriate use of linguistic expressions, i.e. 'The correct expression for John's qualities is not *good*, but *excellent*'.

[13] In German, the connective *aber* cannot be substituted for by a concessive pronominal adverb for syntactic reasons, if the conjuncts are subordinated clauses, compare (i) and (ii). This is further evidence that contrast and concession are of different type.

> (i) Anna sagt, daß es regnet, aber Mutter [trotzdem]im Garten ist.
> (ii) * Anna sagt, daß es regnet, Mutter trotzdem im Garten ist.